A new genus and species of pinnotherid crab (Crustacea, Decapoda, Brachyura) from Indonesia

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ABSTRACT
Seven specimens of *Alain crosnieri* n.g., n.sp., were taken off Maluku, Indonesia in holothurians, genus *Molpadia*, during the KARUBAR Expedition 1991 in depths of 399-405 and 457-461 m. *Alain crosnieri* is unique among members of the Pinnotherinae in having only six abdominal somites in the male, with the second and third somites fused. It also is only the second member of the Pinnotherinae to be taken in depths greater than 400 m and to be represented by an androgynous male.

KEY WORDS
Crustacea,
Decapoda,
Brachyura,
Alain crosnieri,
new genus,
new species,
holothurians.

RÉSUMÉ
Un nouveau genre et une nouvelle espèce de crabe Pinnotheridae (Crustacea, Decapoda, Brachyura) d'Indonésie. Sept spécimens d'*Alain crosnieri* n.g., n.sp., ont été récoltés dans l'archipel des Moluques, en Indonésie, au cours de l'expédition KARUBAR en 1991. Cette espèce est un commensal intestinal d'holothuries du genre *Molpadia*, vivant à des profondeurs comprises entre 399 et 461 m. *Alain crosnieri* est le seul membre de la sous-famille des Pinnotherinae à posséder seulement six somites abdominaux chez le mâle, les deuxième et troisième somites étant fusionnés. C'est également le second membre des Pinnotherinae prélevé à des profondeurs supérieures à 400 m et représenté par un mâle androgyne.

MOTS CLÉS
Crustacea,
Decapoda,
Brachyura,
Alain crosnieri,
nouveau genre,
nouvelle espèce,
holothuries.

INTRODUCTION

Among the specimens collected during the KARUBAR Expedition 1991 to Indonesia were two lots of a pinnotherid which Alain Crosnier sent to me for study. These were all taken in holothurians, genus *Molpadia* Cuvier, 1817, from depths of 405-399 and 457-461 m, an unusually deep habitat for a pinnotherid crab. Although these specimens superficially resemble those species of *Pinnotheres* s.l. known from holothurians and included in Part III of Bürger's (1895: 364) key as well as those species listed by Schmitt *et al.* (1973: 13) as associates of holothurians, the crab represented in the KARUBAR collections proved to belong to a new genus and species, named herein.

The female holotype and four paratypes are in the collections of the Muséum national d'Histoire naturelle, Paris, France (MNHN); two paratypes are in the collections of the National Museum of Natural History, Smithsonian Institution, Washington, D. C. (USNM).

Abbreviations

cl	carapace length, measured on the midline;
cb	carapace breadth;
CC	shrimp trawl used at KARUBAR stations;
CP	beam trawl used at KARUBAR stations;
fm	fathoms;
m	meters;
mm	millimeters;
MXP2	second maxilliped;
MXP3	third maxilliped;
n	number;
PLP(s)	pleopod(s);
Stn	station;
WL1-4	first to fourth walking legs.

Sizes are expressed as cl × cb. All measurements are in millimeters.

SYSTEMATICS

Family Pinnotheridae De Haan, 1833
Subfamily Pinnotherinae De Haan, 1833
Alain n.g.

Type species. — *Alain crosnieri* n.sp., by present designation and monotypy. The gender is masculine.

Etymology. — Dedicated to my friend and colleague, Alain Crosnier, whose unmatched energy, interest, and abilities in the field have added so much to our knowledge of the decapod and stomatopod crustaceans of West Africa, Madagascar, the Philippines, Indonesia, New Caledonia, and Tahiti, indeed, anywhere he has had the opportunity to make collections. His collecting ability is matched only by his interest in sharing material with other museums and seeing the fruits of his labors studied and published upon by his colleagues around the world.

Host. — A holothurian, genus *Molpadia*, collected in depths of 399-405 m and 457-461 m.

Diagnosis

Size moderately large, females as large as cl 11.7, cb 13.0. Carapace firm, subcircular, 1.1 to 1.2 times broader than long (appearing 1.0 in Fig. 1A), widest near midlength. MXP3 with ischium and merus fused, 3-segmented exopod present; palp 3-segmented; propodus spatulate, longer than carpus; dactylus spatulate, narrower than propodus, inserted near midlength of lower margin of propodus, and extending beyond its apex. WL1-4 similar, subequal right and left; dactyli of WL1-2 similar, subequal in length, shorter than subequal dactyli of WL3-4. Abdomen of six somites in male, somites 2 and 3 fused; abdomen with seven somites in female.

Remarks

This new genus can be distinguished from all other genera now recognized in the Pinnotherinae by the fusion of abdominal somites 2 and 3 in the male. As pointed out by me (1993: 127, 128), members of only two genera, *Juxtafabia* Campos, 1993 and *Ernestotheres* Manning, 1993, are known to have only six abdominal somites in the male. In *Ernestotheres* somites 5 and 6 are fused, whereas in *Juxtafabia* somites 4 and 5 are fused. *Ernestotheres* further differs from *Alain* and *Juxtafabia* in having the dactyli of the walking legs subequal; in *Alain* and *Juxtafabia*, the dactyli of WL3-4 are the longest of all dactyli.

I have been able to find only one other record of a member of the Pinnotherinae living in depths of more than 400 m, *Pinnotheres abyssicola* Alcock *et* Anderson, 1899. It was taken off the Travancore coast of India in 430 fm (787 m) in a bivalve,

genus *Lima* Bruguiere, 1797. The unique ovigerous female of *P. abyssicola* apparently has never been figured. It probably should be referred to a new genus, as the distal segment of MXP3 is styliform and articulated terminally on the subdistal segment; Alcock & Anderson (1899) did not mention whether the palp is composed of two or three segments. It also differs from *Alain crosnieri* in having long, slender walking legs, with the dactyli of WL1 and two longer than those of the other two legs. Some species of the genus *Fabia* Dana, 1851, e.g., *Fabia emiliai* (Melo, 1971) and *F. felderi* Gore, 1986 also have two abdominal somites fused (E. Campos, *in litt.*).

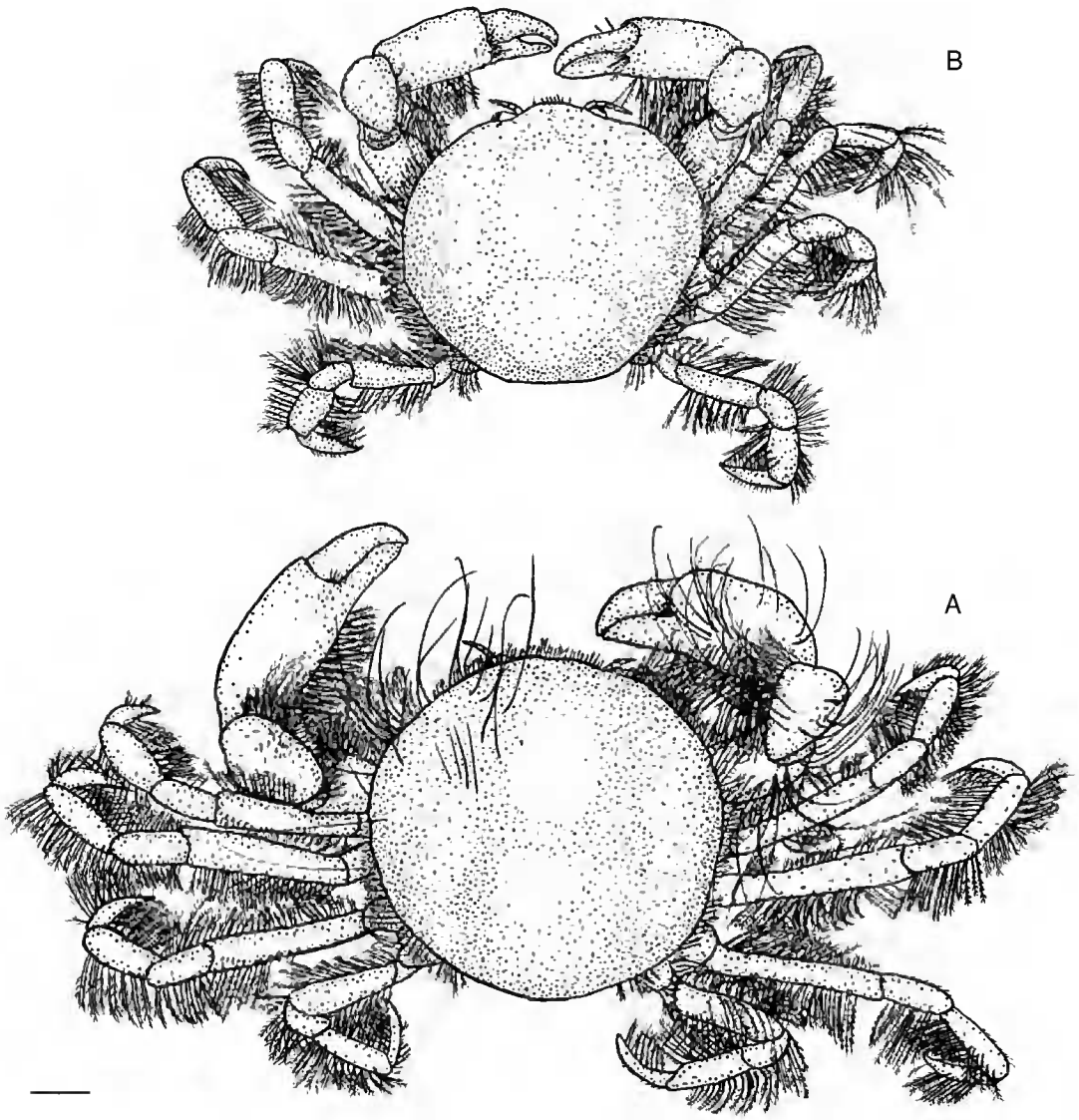

FIG. 1. — *Alain crosnieri* n.g., n.sp.; **A**, ♀ paratype, 11.7 × 13.0 mm, dorsal view; **B**, androgynous male paratype, 7.6 × 8.3 mm, dorsal view (left WL3 missing) (both MNHN-B 26142). Scale bar: 2 cm.

Alain crosnieri n.sp.
(Figs 1-3)

MATERIAL. — **Indonesia**, Maluku, KARUBAR Expedition, stn CP 59, 8°20'01"S - 132°09'32"E, 399-405 m,, 31.X.1991: 3 ♂♂, 8.3 × 9.5, 8.3 × 10.0 and 9.4 × 10.6; 2 ♀♀, 9.9, 8.2 × 9.5 and 10.4 × 11.2 [♀, 8.2 × 9.5 is holotype (MNHN-B 26140) and 2 ♂♂ are paratypes (MNHN-B 26141); 1 ♂ and 1 ♀ are paratypes (USNM 264723)]. — Stn CC 58, 8°21'47"S - 132°00'55"E, 457-461 m, 31.X.1991: 1 ♂, 7.6 × 8.3, 1 ♀, 11.7 × 13.0 (paratypes, MNHN-B 26142).

SIZE RANGE. — 4 ♂♂, 7.6 × 8.3 to 9.4 × 10.6; 3 ♀♀, 8.2 × 9.5 to 11.7 × 13.0.

DISTRIBUTION. — Known only from off Maluku, Indonesia.

ETYMOLOGY. — See etymology for genus, above.

DESCRIPTION

Female (Fig. 1A) similar to male but larger; much more setose, especially on the walking legs; and abdomen with seven rather than six somites. Size large, cb to at least 13 mm. Carapace firm, subcircular, width 1.1-1.2 times length (appearing 1.0 in Fig. 1A). Anterolateral surfaces almost vertical. Surface punctate, regions poorly defined. Front scarcely projecting, broadly V-shaped in anterior view. Eyes not visible in dorsal view. Margin of carapace, other than posterior, lined with plumose setae, larger and denser above base of cheliped. Dorsal surface of carapace with few very long, simple setae.

Cheliped with numerous long, simple setae on carpus and palm; movable finger half as long as palm; chela with finger tips appressed in distal third, tips not crossing; movable finger with tooth in proximal third, fixed finger with larger, irregular tooth in distal third; setae present in gape of chela; inner, lower surface of chela densely setose. Carpus densely setose on inner surface. Merus densely setose on inner, ventral distal, and outer proximal surfaces.

WL equal right and left, all segments densely setose, WL2-3 with swimming setae. Dactyli of walking legs simple, similar, dactyli of WL1-2 subequal in length, shorter than subequal dactyli of WL3-4. Propodus of WL4 shortest of all propodi of walking legs. WL1 reaching beyond base of dactylus of WL2 when extended, dactylus 0.7 times as long as propodus, latter about 2.5 times longer than high, 1.3 times longer than carpus; merus 2 times as long as carpus. WL2 with dactylus 0.67 times as long as propodus, latter 2.7 times longer than high, 1.2 times longer than carpus; merus 2 times as long as carpus. WL3 with dactylus 1.2 times as long as propodus, latter 2.9 times longer than high, 1.2 times longer than carpus; merus 2 times as long as carpus. WL4 with dactylus 1.2 times as long as propodus, latter 2.3 times longer than high, 0.9 times as long as carpus; merus 1.3 times as long as carpus.

Abdomen with seven somites, reaching to bases of walking legs and MXP3, margin lined with long setae. Four pairs of biramous pleopods present, one pair each on somites 2-5.

Male (Fig. 1B) smaller than female; size large, cb to about 11 mm; much less setose than female, setae present in same areas but sparser and shorter. Swimming setae present on WL2-3. Carapace firm, 1.1-1.2 times broader than long, front scarcely projecting, eyes visible in dorsal view. Chelae with finger tips crossing, opposable margins of fingers armed as in female. Cheliped (Fig. 2C) with movable finger longer than that of female, 0.8 times as long as palm, latter 1.3 times longer than high. WL (Fig. 2D-G) as in female, propodus of WL4 shortest of propodi of walking legs. Proportions of walking legs similar to those of female, differing in having a stouter propodus on WL3-4. Abdomen (Fig. 2H) of male very broad, hourglass-shaped, only six somites present, somites 2-3 fused. Male PLP1 (Figs 2J, K) a simple tube; in androgynous male PLP2 and poorly developed biramous female pleopod both present on fused somites 2-3 (Fig. 2I); uniramous female pleopods present on somites 4 and 5 (Fig. 2I). Female gonopores present.

REMARKS

This is only the second species of Pinnotherinae in which androgynous males are known. The other species is *Nepinnotheres androgynus* Manning, 1993, from Senegal. In *A. crosnieri*, the male has two gonopods and three female-like pleopods (Fig. 2I); in figure 2I the first pair of gonopods has been removed and is not shown.

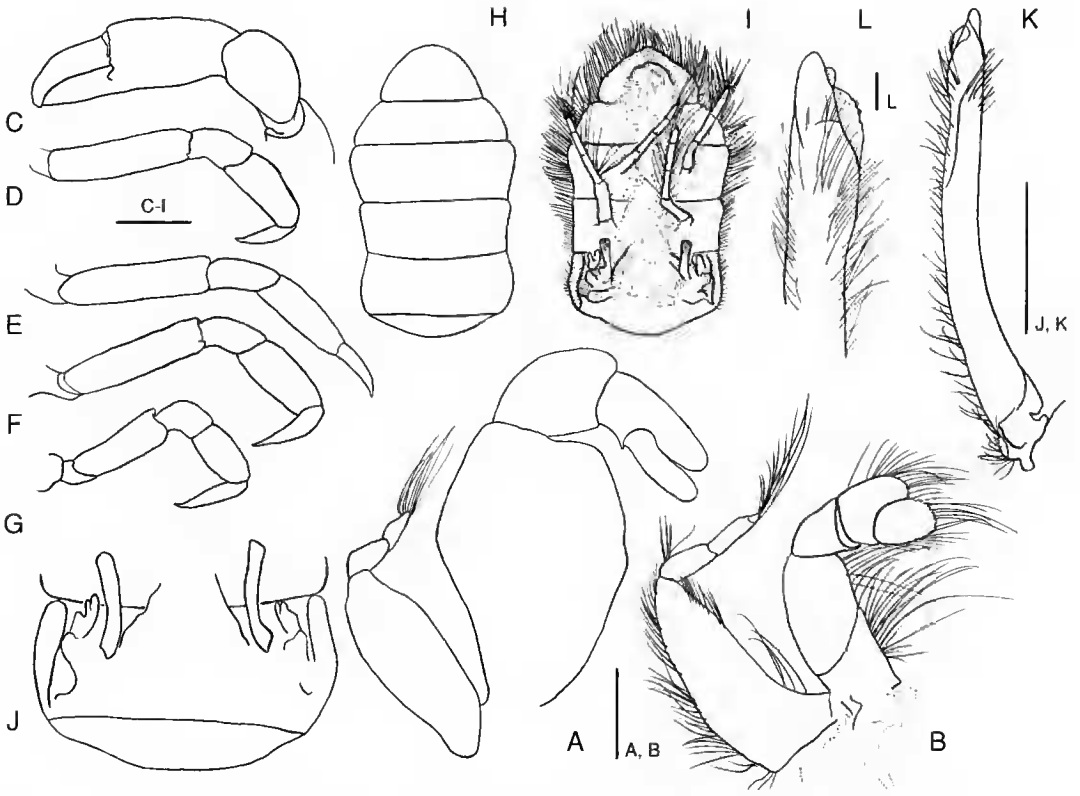

FIG. 2. — *Alain crosnieri* n.g., n.sp., androgynous ♂ paratype, 7.6 × 8.3 mm (MNHN-B 26142); **A**, MXP3; **B**, MXP2; **C**, cheliped; **D-G**, WL1-4; **H**, abdomen, dorsal (outer) view; **I**, abdomen, ventral (inner) view, ♂ PLP1 removed; **J**, gonopod; **K**, apex of gonopod. (Setae omitted in Fig. 2A-H.). Scale bars: A, B, 10 mm; C-I, 2 mm; J-K, 2 mm; L, 10 mm.

The proportions of the merus, carpus, propodus and dactylus of each of the walking legs of the female are shown diagrammatically in figure 3.

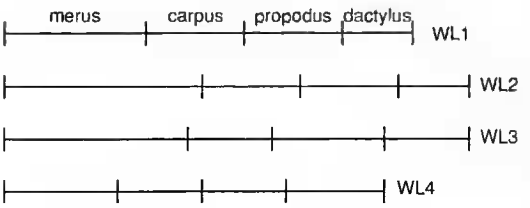

FIG. 3. — *Alain crosnieri* n.g., n.sp., ♀, diagrammatic representation of merus, carpus, propodus, and dactylus of WL1-4.

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